Kimley-Horn
and Associates, Inc.

March 21, 2008

Suite 600
401 B Street
San Diego, California
92101-4218

Khalid Jamil
Rehman Care Corporation
9367 Vervain Street
San Diego, CA 92129

Re: Ramona Senior Manor Noise Analysis

Dear Mr. Jamil:

At your request, Kimley-Horn and Associates, Inc. (KHA) conducted an analysis of mechanical noise associated with the proposed Ramona Senior Manor project for compliance with the County of San Diego noise ordinance. The project site is located at 1236 D Street, in the Community of Ramona, in the County of San Diego (Figure 1). For purposes of this analysis, true northwest is defined as project north. The following presents our findings.

Project Description

The project site is located on the south side of D Street, between 12th Street and 13th Street. The project would consist of the removal of the existing single-family residence and the construction of a 14,050 square foot, two-story, 28-bedroom multi-family assisted care living facility (Figure 2).

Environmental Noise Background

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in cycles per second, or hertz (Hz), whereas intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually as pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. The average

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person perceives a change in sound level of about 10 dB as a doubling of the sound's loudness; this relation holds true for sounds of any loudness.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. A simple rule is useful, however, in dealing with sound levels. If a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example, 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB.

The normal human ear can detect sounds that range in frequency from about 20 Hz to 20,000 Hz. However, all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the range of 1,000 Hz to 4,000 Hz. This frequency dependence can be taken into account by applying a correction to each frequency range to approximate the human ear's sensitivity within each range. This is called A-weighting and is commonly used in measurements of community environmental noise. The A-weighted sound pressure level (abbreviated as dBA) is the sound level with the "A-weighting" frequency correction. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Because community noise fluctuates over time, a single measure called the Equivalent Sound Level (Leq) is often used to describe the time-varying character of community noise. The Leq is the energy-averaged A-weighted sound level during a measured time interval, and is equal to the level of a continuous steady sound containing the same total acoustical energy over the averaging time period as the actual time-varying sound. The period of the measurement is assumed to be 1-hour unless otherwise specified.

Applicable Noise Standards

The following excerpts are applicable to operation of the proposed project:

<u>County of San Diego Noise Ordinance, Section 36.404, Sound Level Limits:</u>

> Unless a variance has been applied for and granted, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below, except that … construction noise level limits shall be governed by Section 36.410 of this chapter …

If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two (2) zoning districts is the arithmetic mean of the respective limits for the two districts; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located.

The sound level limits are summarized in Table 1.

Table 1. San Diego County Code Section 36.404: Sound Level Limits

ZONE		APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
R-RO, R-C, R-M, C-30, S-86, R-V, R-U and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S-94, V4, and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2 V1, V2 V1 V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones.	Anytime	75

Notes:

If the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level will be the ambient noise level. The ambient noise level will be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts; provided however, that the one-hour average sound level limit applicable to extractive industries including but not limited to borrow pits and mines, will be 75 dBA at the property line regardless of the zone where the extractive industry is actually located.

Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit which authorizes the noise-generating use or activity, and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, then implementation and compliance with such noise mitigation measures shall be deemed to constitute compliance with this section.

Existing Noise Environment

The existing noise environment in the project area is primarily a result of vehicular traffic on Main Street (State Route 67) and D Street.

A short-term (30-minute) sound level measurement was conducted on the project site. ML1 was near the southeast corner of the site, approximately 165 feet south of the D Street centerline and 10 feet west of the east project property line (Figure 2). The measurement was conducted on Tuesday, February 26, 2008, between 8:50 a.m. and 9:20 a.m. The measurement results are summarized in Table 2. Noise sources during the measurement included wind through trees, vehicular traffic on D Street, birds chirping, occasional distant light aircraft, occasional domestic activity, distant vehicular traffic on Main Street, and occasional engine, tool, and radio use associated with the auto repair shop located northwest of the site.

One Rion Model NA-28 American National Standards Institute (ANSI) Type 1 Integrating Sound Level Meter (SLM) was used as the data collection device. The meter was calibrated before and after the measurement period. The meter was mounted on a tripod roughly five feet above the ground to simulate the average height of the human ear. The sound level measurement was in accordance with ISO 1996a, b, and c.

Table 2. Sound Level Measurement

Measurement	Leq	Lmin	Lmax	L10	L50	L90
ML1	50.8	45.9	56.9	52.5	50.4	48.5

Modeling Software

The Cadna/A Noise Prediction Model was used to estimate project-generated sound levels. Cadna/A is a software program that estimates noise levels at selected locations from a variety of noise sources. The model uses industry-accepted propagation algorithms and accepts sound power levels (in dB re 1 picoWatt) provided by the equipment manufacturer. The model calculates industrial noise based on ISO 9613 standards. The Cadna/A calculations account for classical sound wave divergence, attenuation factors resulting from air absorption, basic ground effects, and barrier/structural shielding. The calculations also account for air absorption under "standard" conditions of 59°F and 70% relative humidity.

Mechanical Equipment

The project would include six split heating/ventilation/air conditioning (HVAC) systems, with condenser units (CUs) on the rooftop and forced-air units (FAUs) in the attic space. Two CU models are proposed for this project; refer to the attached rooftop mechanical plan (LightHouse Design 2008), Table 3, and the attached manufacturer's specification sheets for model numbers and sound levels.

Table 3. Noise Generating Equipment

Noise Source	Dimensions (W x D x H)	Sound Power Level	Mechanical Plan
Goodman GSC130481	29" x 29" x 38¼"	76 dBA	CU-2, CU-4, CU-6
Goodman GSC130601	35½" x 35½" x 38¼"	77 dBA	CU-1, CU-3, CU-5

The project building is two stories. The height of the outer roof edge is approximately 20 feet above ground level. The CUs would be located on pads approximately 3 feet above the outer roof edge, with the closest edges of the units set back approximately 6 feet from the outer pad edge. Refer to Figure 2 for locations. All equipment was assumed to be continuously operational.

The residence to the east is approximately 20 feet east of the east property line. The residence to the south is approximately 30 feet south of the south property line. All surrounding residences are single-story. The receptor grid and evaluation points were placed at a height of 5 feet above ground level. No topography or structures other than the project building were included in the model. The mechanical equipment was modeled as 4-sided vertical area sources. Refer to Table 4 for a list of modeling parameters.

Table 4. Modeling Parameters

Unit	Distance to Nearest Property Line	Height of Top Above Ground	Intervening Rooftop Pad Edge Location
CU-1, CU-2, CU-3	29 feet	27 feet	6 feet from front CU face
CU-4, CU-5, CU-6	17 feet	27 feet	6 feet from front CU face

Each rooftop mechanical equipment unit was modeled as a four-sided vertical area source. The project building and rooftop equipment pad edge were modeled as barriers.

The rooftop mechanical equipment would generate noise levels up to 42 dBA Leq at the adjacent properties. Refer to Table 5 and Figure 3 for noise levels at various locations. As shown on Figure 3, the evaluation points within the east and south properties were placed at the locations with the highest project-generated noise levels.

Table 5. Noise Generating Equipment

Location	Receptor	Sound Level
East Property Line	E1	36 dBA
35' East of East Property Line	E2	42 dBA
South Property Line	S1	37 dBA
30' South of South Property Line	S2	41 dBA

Design Considerations

The project includes the following design features which reduce noise impacts:

- Placement of the condenser units on an equipment pad on the rooftop of a two-story building.
- Placement of the condenser units such that the closest edges are set back approximately 6 feet from the outer pad edge.

Conclusions

As designed, the project rooftop mechanical equipment would not generate noise levels exceeding County standards. This concludes our report. Please contact me at 619-234-9411 if you have any questions.

Very truly yours,

KIMLEY-HORN AND ASSOCIATES, INC.

Jeffrey D. Fuller, INCE, REHS
Project Manager

Figures

Figure 1. Vicinity Map
Figure 2. Rooftop Plan Showing Measurement Location
Figure 3. Project-Generated Noise Contours

Attachments

Roof Plan / Mechanical Plan
Goodman HVAC Specifications
Cadna/A Input / Output Data

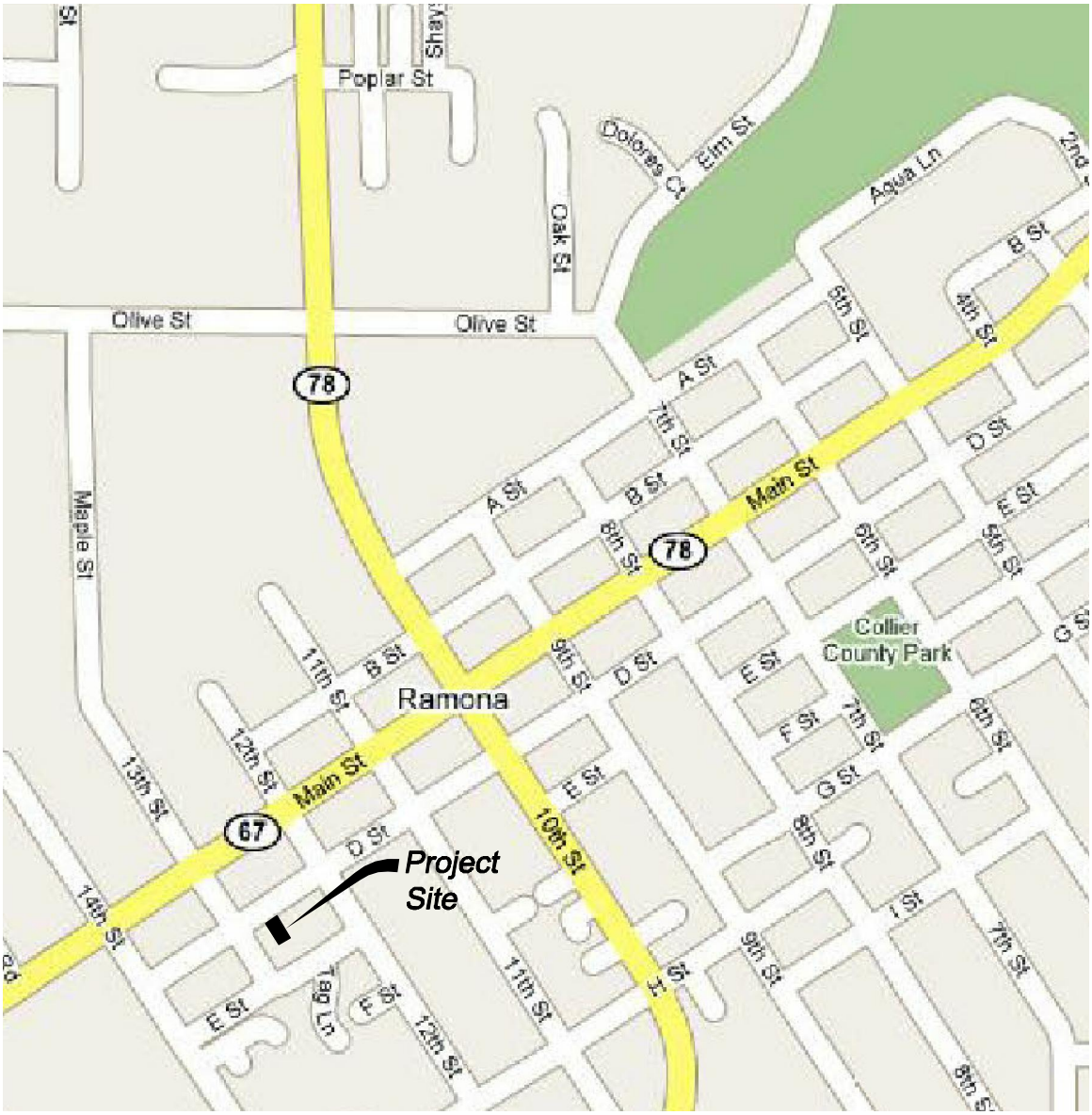
References

County of San Diego. 2005. County Code of Regulatory Ordinances, Section 36, Chapter 4: Noise Abatement and Control. May 11.

2007. First Iteration Review of Initial Studies/Information for Ramona Senior Manor. November 6.

2008. Email from Curt Gonzales to mjamil@san.rr.com. Subject: Required Plot Changes & Noise Analysis Requirements For The Ramona Care Facility (S07-042). February 6.

LightHouse Design. 2008. Ramona Senior Manor. Roof Plan / Mechanical Plan. March 21.



North

Not To Scale

Figure 1

Vicinity Map

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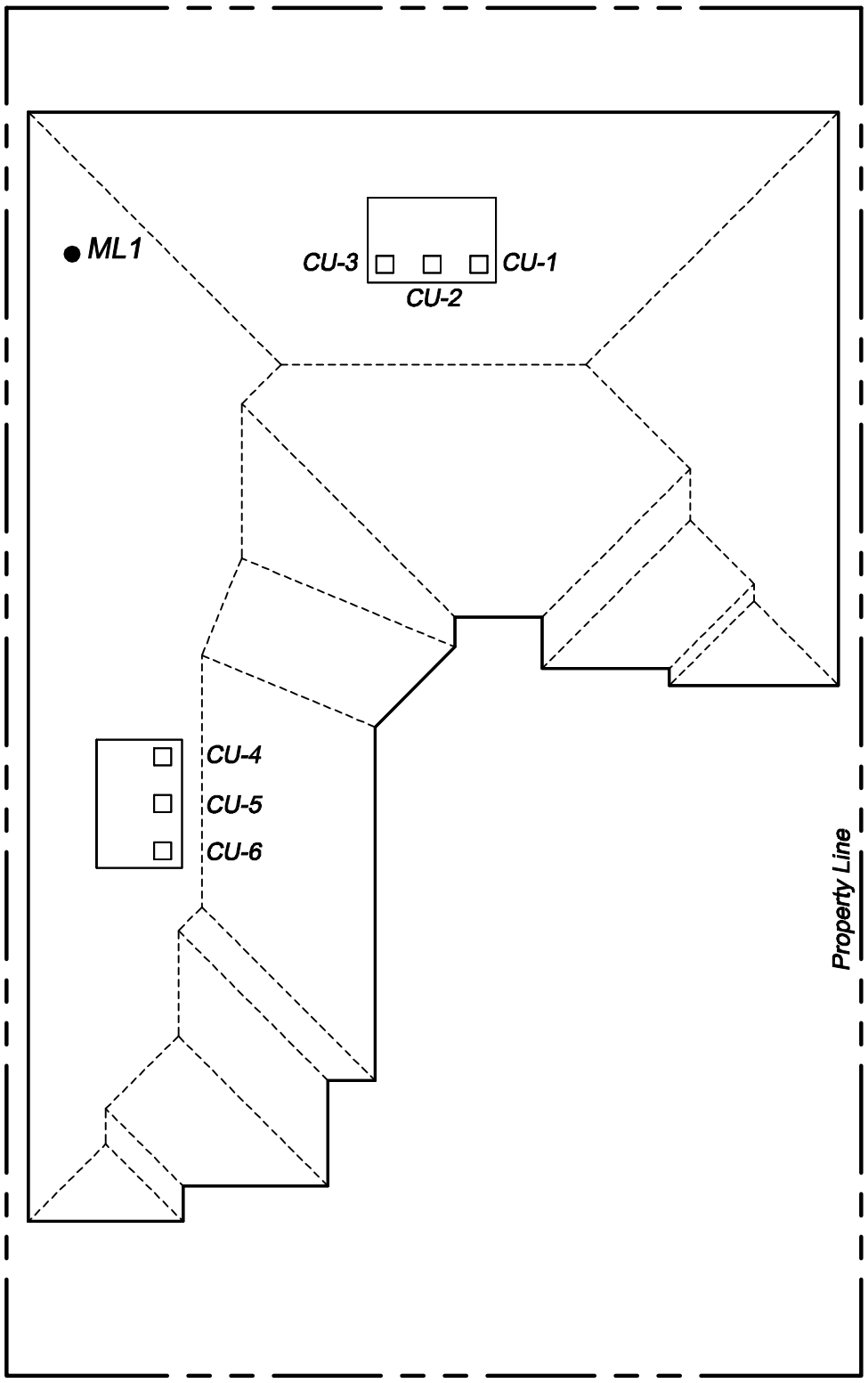

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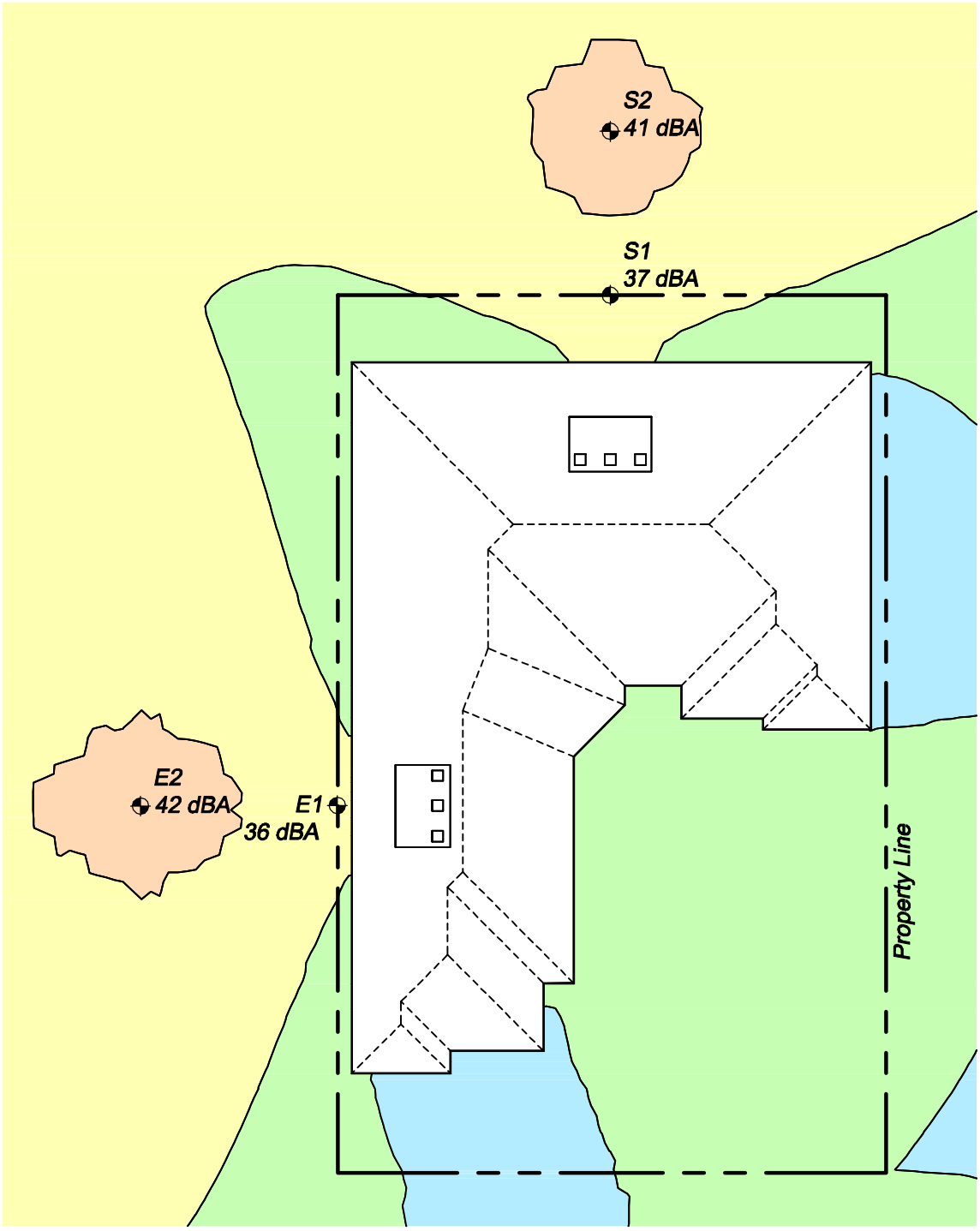
Figure 2

Rooftop Mechanical Plan



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Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Figure 3

Project-Generated Noise Levels

Goodman®

Air Conditioning & Heating

Product Specifications

GSC13

13 SEER

High-Efficiency Split System Air Conditioner

1½ to 5 Ton

Residential

10 YEAR PARTS LIMITED WARRANTY

Commercial

5 YEAR PARTS LIMITED WARRANTY

GoodCare EXTENDED SERVICE PLAN

ETL LISTED

ARI PERFORMANCE CERTIFIED

The GSC13 Split System Air Conditioner features the unique Goodman® sound control top designed for quiet operation. In addition, the unit has an attractive louvered metal guard that protects the coil from damage plus a powder-paint finish that provides premium durability and improved UV protection.

Standard Features

- Energy-efficiency compressor
- Quiet condenser fan system
- Factory-installed liquid line filter dryer
- Copper tube/aluminum fin coil
- R-22 refrigerant-charged for 15' of refrigerant lines
- Brass liquid and suction service valves with sweat connections
- Contactor with lug connections
- Ground lug connection
- ARI Certified
- ETL Listed

Cabinet Features

- Unique Goodman® sound control top design
- Steel louver coil guard
- Heavy-gauge galvanized-steel cabinet
- Attractive Architectural Gray powder-paint finish with 500-hour salt-spray approval
- When properly anchored, meets the 2001 Florida Building Code unit integrity requirements for hurricane-type winds

Contents

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Product Specifications 3-4
Dimensions 5
Expanded Cooling Data 6
ARI Performance Ratings 32
Accessories 52

GUARANTEED QUALITY ★★★★★ DARE to COMPARE Goodman EXCEPTIONAL VALUE

SPECIFICATIONS (CONT.)

	GSC13 0421AA	GSC13 0481AA	GSC13 0483A	GSC13 0484A	GSC13 0601B	GSC13 0603A	GSC13 0604A
Cooling Capacities							
Nominal Cooling (BTU/h)	42,000	48,000	48,000	48,000	57,000	57,000	57,000
Decibels	76	76	76	76	77	77	77
Compressor							
RLA	14.7	17.9	12.4	5.8	25.0	17.3	6.7
LRA	77.0	104.0	88.0	44.0	148.0	123.0	49.5
Condenser Fan Motor							
Horsepower	¼	¼	¼	¼	1/6	1/6	1/6
FLA	1.6	1.6	1.6	0.8	1.1	1.1	0.6
Refrigeration System							
Refrigerant Line Size							
Liquid Line Size (“O.D.)	⅜”	⅜”	⅜”	⅜”	⅜”	⅜”	⅜”
Suction Line Size (“O.D.)	1⅛”	1⅛”	1⅛”	1⅛”	1⅛”	1⅛”	1⅛”
Refrigerant Connection Size							
Liquid Valve Size (“O.D.)	⅜”	⅜”	⅜”	⅜”	⅜”	⅜”	⅜”
Suction Valve Size (“O.D.) [3] [4]	⅞” [4]	⅞” [4]	⅞” [4]	⅞” [4]	⅞” [4]	⅞” [4]	⅞” [4]
Valve Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge	143	158	158	158	175	175	175
Shipped with Orifice Size	---	0.082	0.082	0.082	---	---	---
Electrical Data							
AC Volts	208/230	208/230	208/230	460	208/230	208/230	460
Hz / Phase	60 Hz/1	60 Hz/1	60 Hz/3	60 Hz/3	60 Hz/1	60 Hz/3	60 Hz/3
Min. Circuit Ampacity [1]	20	24	17.2	8.0	32.3	22.7	9.0
Max. Overcurrent Device [2]	30	40	20	15	50	40	15
Min / Max Volts	197/253	197/253	197/253	414/506	197/253	197/253	414/506
Electrical Conduit Size	½” or ¾”	½” or ¾”	½” or ¾”	½” or ¾”	½” or ¾”	½” or ¾”	½” or ¾”
Ship Weight (lbs)	199	207	207	207	242	242	242

[1] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[2] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

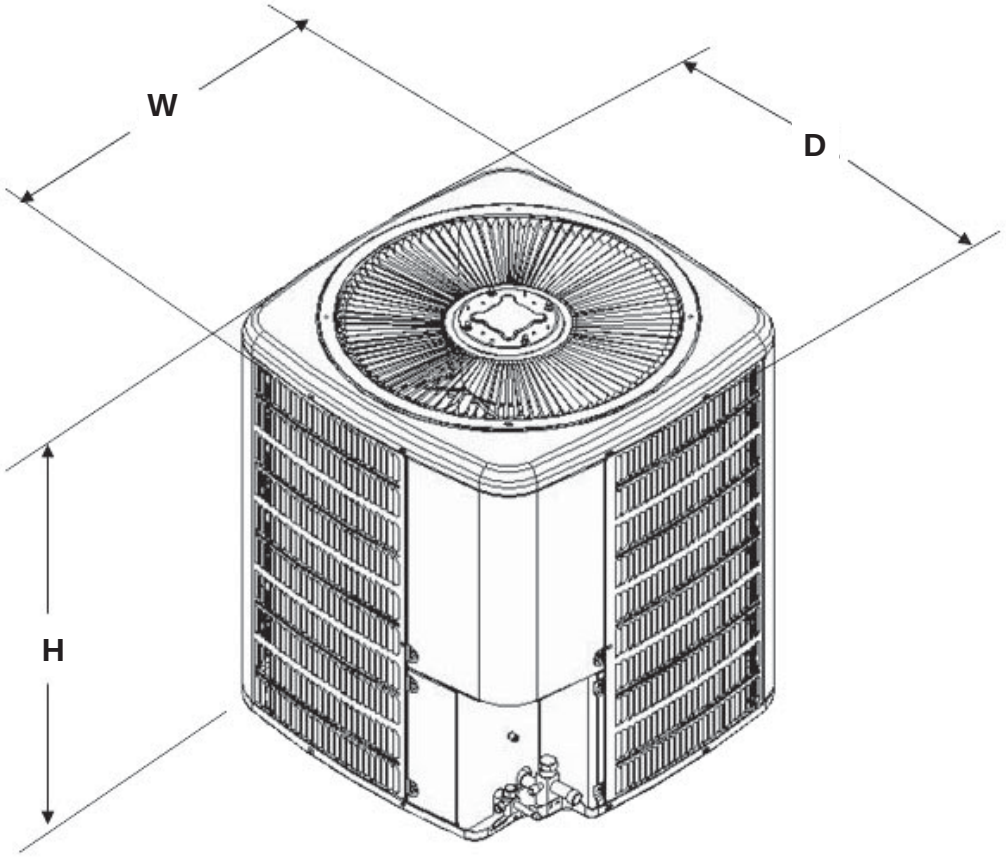
[3] Installer will need to supply ¾” to ⅞” adapters for suction line connection.

[4] Installer will need to supply ⅞” to 1⅛” adapters for suction line connections.

Notes

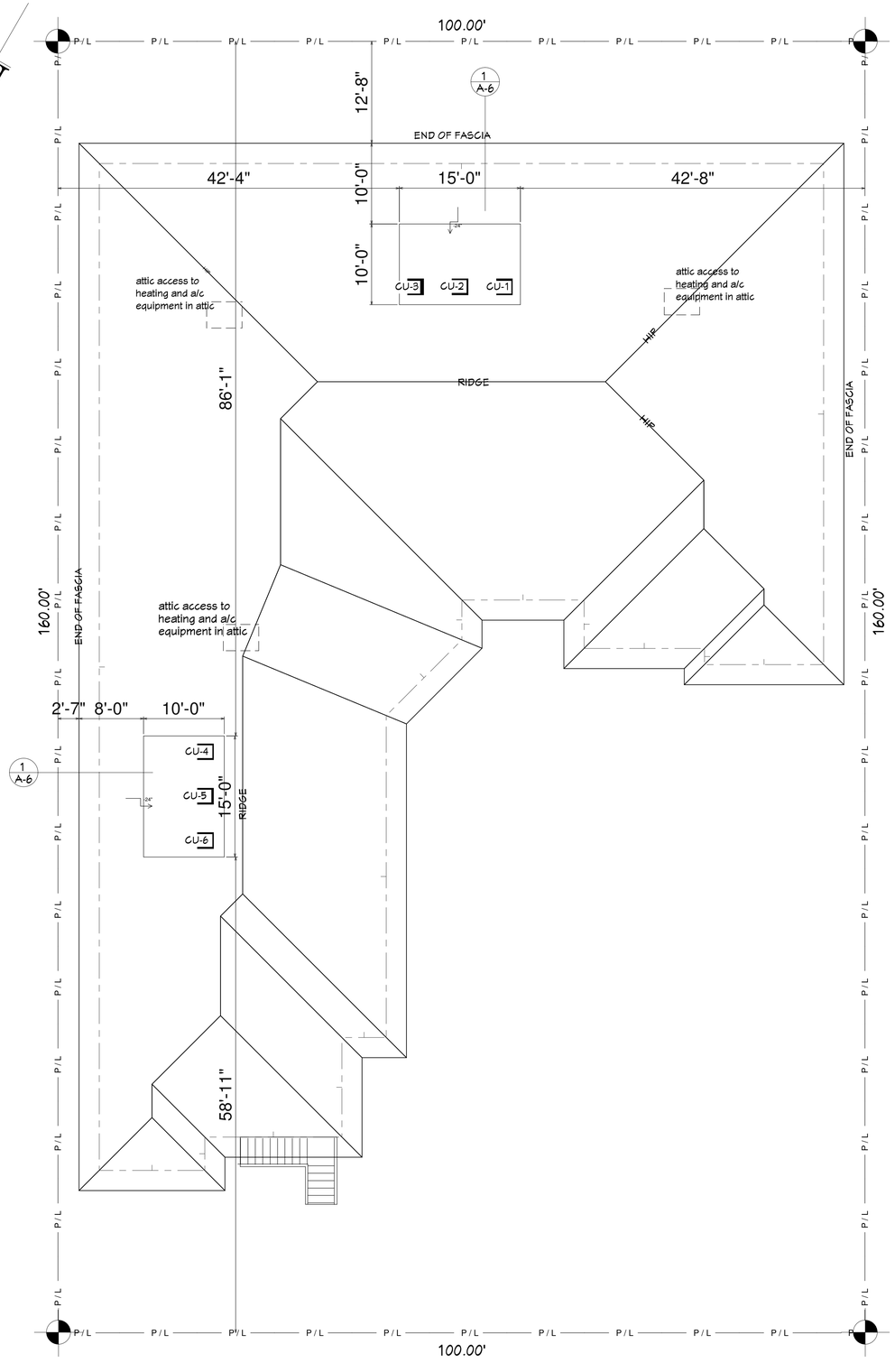
- Always check the S&R plate for electrical data on the unit being installed.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DIMENSIONS



Model	Dimensions W x D x H
GSC130181AA	26 x 26 x 29¾
GSC130241A	26 x 26 x 34¾
GSC130241C	26 x 26 x 34¾
GSC130301A	29 x 29 x 34¾
GSC130361AA	29 x 29 x 34¼
GSC130361BA	29 x 29 x 34¾
GSC130361CA	29 x 29 x 34¾
GSC130361DA	29 x 29 x 34¾
GSC130361DF	29 x 29 x 34¾
GSC130363A	29 x 29 x 34¼
GSC130421AA	29 x 29 x 34¼
GSC130481AA	29 x 29 x 38¼
GSC130483A	29 x 29 x 38¼
GSC130484A	29 x 29 x 38¼
GSC130601B	35½ x 35½ x 38¼
GSC130603A	35½ x 35½ x 38¼
GSC130604A	35½ x 35½ x 38¼

Sources	Result. PWL			Freq.	Direct.		Receivers	Level Lr			Coordinates				Building			
	Day	Evening	Night					Day	Night	Height	X	Y	Z		x (m)	y (m)	z (m)	Ground (m)
Name	(dBA)	(dBA)	(dBA)	(Hz)			Name	(dBA)	(dBA)	(m)	(m)	(m)	(m)		16.16	-5.62	6.1	0
CU-1	77	77	77	500	(none)		E1	36.4	36.4	1.5	15.38	-30.26	1.5		45.05	-5.62	6.1	0
CU-2	76	76	76	500	(none)		E2	40.1	40.1	1.5	9.25	-30.29	1.5		45.05	-26.1	6.1	0
CU-3	77	77	77	500	(none)		S1	37.2	37.2	1.5	30.55	-1.9	1.5		39.02	-26.1	6.1	0
CU-4	76	76	76	500	(none)		S2	41.2	41.2	1.5	30.54	7.2	1.5		39.02	-25.5	6.1	0
CU-5	77	77	77	500	(none)										34.48	-25.5	6.1	0
CU-6	76	76	76	500	(none)										34.48	-23.6	6.1	0
															31.38	-23.6	6.1	0
				Sources: Coordinates											31.38	-24.7	6.1	0
CU-1							CU-4								28.53	-27.5	6.1	0
x (m)	y (m)	z (m)	Ground (m)	z-extent (m)			x (m)	y (m)	z (m)	Ground (m)	z-extent (m)				28.53	-40.1	6.1	0
32.58	-10.68	8.1	0	1			20.59	-28.25	8.1	0	1				26.85	-40.2	6.1	0
32.58	-11.39	8.1	0	1			21.3	-28.25	8.1	0	1				26.85	-43.9	6.1	0
31.87	-11.39	8.1	0	1			21.3	-28.95	8.1	0	1				21.68	-43.9	6.1	0
31.87	-10.68	8.1	0	1			20.59	-28.95	8.1	0	1				21.68	-45.2	6.1	0
32.58	-10.68	8.1	0	1			20.59	-28.25	8.1	0	1				16.16	-45.2	6.1	0
CU-2							CU-5								Roof Line E			
x (m)	y (m)	z (m)	Ground (m)	z-extent (m)			x (m)	y (m)	z (m)	Ground (m)	z-extent (m)				x (m)	y (m)	z (m)	Ground (m)
30.91	-10.68	8.1	0	1			20.59	-29.92	8.1	0	1				18.61	-32.6	7.1	0
30.91	-11.39	8.1	0	1			21.3	-29.92	8.1	0	1				18.61	-28	7.1	0
30.2	-11.39	8.1	0	1			21.3	-30.62	8.1	0	1				21.64	-28	8.6	0
30.2	-10.68	8.1	0	1			20.59	-30.62	8.1	0	1				21.64	-32.6	8.6	0
30.91	-10.68	8.1	0	1			20.59	-29.92	8.1	0	1				18.61	-32.6	7.1	0
CU-3							CU-6								Roof Line S			
x (m)	y (m)	z (m)	Ground (m)	z-extent (m)			x (m)	y (m)	z (m)	Ground (m)	z-extent (m)				x (m)	y (m)	z (m)	Ground (m)
29.23	-10.69	8.1	0	1			20.59	-31.61	8.1	0	1				28.26	-8.67	7.1	0
29.23	-11.4	8.1	0	1			21.3	-31.61	8.1	0	1				28.26	-11.7	8.6	0
28.52	-11.4	8.1	0	1			21.3	-32.31	8.1	0	1				32.83	-11.7	8.6	0
28.52	-10.69	8.1	0	1			20.59	-32.31	8.1	0	1				32.83	-8.67	7.1	0
29.23	-10.69	8.1	0	1			20.59	-31.61	8.1	0	1				28.26	-8.67	7.1	0

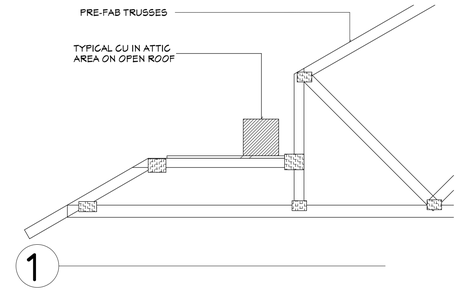


Mechanical Legend

FAU-1 FAU-3 FAU-5	GOODMAN GMC SERIES 80% EFFICIENCY 50,000 BTU, 1990 CFM
FAU-2 FAU-4	GOODMAN GMC SERIES 80% EFFICIENCY 70,000 BTU, 1600 CFM
CU-1 CU-3 CU-5	GOODMAN MODEL#GSC130601 5 TON, R-22
CU-2 CU-4 CU-6	GOODMAN MODEL#GSC130481 4 TON, R-22

NOTE: ALL FAU'S TO BE LOCATED IN ATTIC

NOTE: CONDENSERS TO BE LOCATED ON ROOFTOP EQUIPMENT PAD



Roof Plan/ Mechanical Plan

Sheet
A-6
of

Joseph Henderson Jr
LightHouse Design
4095 Bonita Road #103
Bonita, Ca
(619) 240-5077
Lighthouse6@cox.net

Designer:

Change:

Project Name: Ramona Senior Manor, Project # 507-042

Mechanical Plan

Title:

H. Khalid Jamil
9367 Verain Street
San Diego, Ca. 92129
(858) 663-9200

Owner:

Designed By:
Joseph Henderson Jr

Date
3/21/2008